REMARKS

Claims 1-6, 10-22, and 26-32 are presently pending in the application. No new matter has been added and support for the amendments to the claims can be found in the specification and drawings. In view of the argument hereinbelow, Applicants respectfully submit that this application is now in condition for allowance.

Claim Rejections – 35 U.S.C. § 103(a)

Claims 1-6, 10-22 and 26-32 presently stand rejected as being anticipated by Robinson et al. U.S. Patent No. 6,404,520 ("Robinson") in view of Sun et al. U.S. Patent Appl. Publication No.: US2002/0018267 ("Sun"). Applicants respectfully traverse this rejection and submit that Robinson fails to disclose or suggest the claimed invention for the reasons set forth in the prior Response, and further that Sun is not effective prior art under 35 U.S.C. §102(e) .

Applicants hereby reiterate the arguments distinguishing Robinson in the prior Response. As previously explained, Robinson discloses a method and apparatus "for providing fault management in an optical communications system by correlating observations from PMD compensators with indicators from at least one, and preferably a plurality, of other devices." See Col. 3, lines 61 – 64. Robinson, however, fails to disclose, suggest or mention anything about rotating "at least one polarization state of the two or more optical signals *based on an error condition* to compensate for PMD." Robinson describes monitoring the bit error rate (BER) of an optical signal, but such BER is not used to *vary* the rotation of the polarization states of the optical signal to compensate for PMD as claimed in the present invention.

Although Robinson discloses a system including a PMD compensator (PMDC 32), there is no discussion of how the PMDC 32 compensates for PMD. Robinson merely teaches that the PMDC 32 is coupled to a controller 22 that receives the "bit error rate (BER) observed at the receiver, the Q measurement obtained at the receiver, alarms or notifications from the PMD compensator along the optical path, and the optical signal-to-noise ratio as measured by the selective optical power meter tapped onto the path near the receiver." See Col. 6, lines 40

– 45. The controller 22 will indicate a potential fiber failure based on these inputs when certain conditions are met as discussed at Col. 6, line 47 et seq. The controller 22, however, *does not direct the PMDC 32 to vary the amount of PMD compensation.* Neither does the PMDC 32 undertake any action to change the rotation of the polarization state *as a function of an error condition.* The specification of Robinson states:

> As the polarization characteristics of the fiber change, the PMDC 32 constantly monitors the optical signal and *adjusts the delay to minimize the PMD contribution to overall dispersion.* PMDC 32 also provides several PMD notifications to controller 22 on output line 34, as will be discussed further shortly. Col. 5, lines 13 – 19. Emphasis added.

Thus, the PMDC adjusts the PMD to minimize the PMD contribution, but there is no explanation as to how this is accomplished. There is certainly no suggestion of utilizing feedback from the detected BER to make adjustments to the level of PMD compensation.

With respect to the detected BER in Robinson, such measurement is provided as input to the controller 22 and constitutes one of the parameters utilized to manage faults in the system. There is no teaching, suggestion or mention of using the BER to adjust the PMD in the manner claimed by Applicants. Accordingly, the fact that the controller 22 communicates with a polarization mode dispersion compensator and an error counter 84 is irrelevant to the claimed subject matter.

Turning now to Sun, Applicants respectfully submit that this reference is not prior art under Section 103(a)/102(e). The effective Section 102(e) date of the subject matter upon which the Examiner is relying upon in making the rejection is the filing date of *July 3, 2001* for U.S. Appl. Serial No. 09/898,394, *not* the filing date of August 9, 2000 of the provisional application (U.S. Appl. Serial No. 60/224,044 ("the '044 Provisional")). The Section 102(e) date of July 3, 2001 is subsequent to the effective filing date of the instant application, which is a continuation of U.S. Appl. Serial No. 09/727,954, filed December 1, 2000 (prior to Sun's filing date). Applicants' reasoning follows.

Under the provisions of 35 U.S.C. §119(e) a provisional application confers three *benefits* to a non-provisional application filed no later than 12 months after the filing date of the provisional as explicitly stated on the United States Patent Office Website:

> (1) patentability would be evaluated as though filed on the earlier provisional application filing date,
>
> (2) the resulting publication or patent would be treated as a reference under 35 U.S.C. §102(e) as of the earlier provisional application filing date, and
>
> (3) the twenty-year patent term would be measured from the later non-provisional application filing date.

http://www.upto.gov/web/offices/pac/provapp.htm @ ¶1.

Benefit (2) is at issue here. The same provision goes on to state "Note also that 35 U.S.C. §112 must be complied with as discussed in the paragraph below *in order to receive the benefit* under 35 U.S.C. §119(e)." Id (emphasis added). In this regard, "...the later-filed non-provisional application is only entitled to the benefit *of the common subject matter disclosed* in the corresponding non-provisional application filed not later than 12 months after the provisional filing date." Id. at @ ¶2 (emphasis added).

Attached hereto (as Appendix 1) is a copy of the '044 Provisional (obtained from the USPTO Website) for the Examiner's reference. Applicants submit that this document contains absolutely no disclosure of "rotating at least one polarization state of the *two or more optical signals based on an error condition* to compensate for PMD (Figures 1, 3A, 3B and 4-6 and see paragraphs [0045]-[0047] and paragraphs [0064]-[0075])" as asserted by the Examiner on page 3 of the Office Action (emphasis added). By way of contrast, the single page disclosure and drawing of the '044 Provisional merely teaches that "[a] magneto-optical element may be used to effect phase rotation of a light signal, and thereby compensate for polarization mode dispersion" where "...a time varying magnetic field is used to dynamically compensate for transmission induced polarization mode dispersion" and "[t]he magnetic field is varied in

accordance with a control signal developed from a feedback path." There is nothing here relating to compensating multiple optical signals for PMD, and/or using an error condition to make such compensation. The description and figures in Sun that were cited by the Examiner in the Office Action *were not disclosed* in the '044 Provisional. Accordingly, none of the teachings of Sun that were cited in the Office Action have a Section 102(e) date prior to the effective filing date of this application. Applicants therefore need not distinguish the substantive disclosure of Sun from the present invention. In view of the foregoing, Applicants respectfully submit that the Section 103 rejection based on the combination of Robinson and Sun is improper, and that request that the rejection based on Sun be withdrawn.

In view of the foregoing, it is believed that independent claims 1-6, 10-22, and 26-32 are patentable over Robinson.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. 1.16 or 1.17 to AT&T Corp. Account No. 01-2745. The Examiner is invited to contact the undersigned at (908) 707-1573 to discuss any matter concerning this application.

Respectfully submitted,
Jonathan A. Nagel, et al.
By:

Date: 12/7/05

Gary H. Monka
Registration No. 35,290
Attorney for Applicants

Canavan & Monka, LLC.
250 State Route 28, Suite 207
Bridgewater, New Jersey 08807
(908) 707-1573

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Docket Number:	YAFO-008

PROVISIONAL APPLICATION FOR PATENT COVER SHEET (Large Entity) A PROV

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTOR(S)/APPLICANT(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Feng ~~Quing~~ Qing	SUN	Columbia, Maryland
Jun	TAO	Columbia, Maryland

☐ *Additional inventors are being named on page 2 attached hereto*

TITLE OF THE INVENTION (280 characters max)

Polarization Mode Compensation Using ~~Magneto0Optic~~ Magneto-Optic Component

CORRESPONDENCE ADDRESS

Direct all correspondence to:

☐ Customer Number → *Place Customer Number Bar Code Label here*

OR

☒ Firm *or* Individual Name	Stephen R. Whitt				
Address	1215 Tottenham Court				
Address					
City	Reston	State	VA	ZIP	20194
Country		Telephone	703-433-9208	Fax	703-433-9209

ENCLOSED APPLICATION PARTS ***(check all that apply)***

☒ Specification *Number of Pages* 1

☒ Drawing(s) *Number of Sheets* 1 ☒ Other (specify) 2 background documents

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT ***(check one)***

☒ A check or money order is enclosed to cover the filing fees

☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 50-0763

FILING FEE AMOUNT: $150.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government

☒ No.

☐ Yes, the name of the U.S Government agency and the Government contract number are ____

Respectfully submitted,

SIGNATURE Stephen R. Whitt DATE August 9, 2000

TYPED or PRINTED NAME Stephen R. Whitt REGISTRATION NO. *(if appropriate)* 34,753

TELEPHONE 703-433-9208

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P19LARGE/REV04

PROVISIONAL APPLICATION FOR PATENT COVER SHEET (Large Entity)

INVENTOR(S)/APPLICANT(S)		
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I certify that this application and enclosed fee is being deposited on with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

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POLARIZATION MODE COMPENSATION USING MAGNETO-OPTIC COMPONENT

By: Feng-Qing and Jun Tao

A magneto-optic element may be used to effect phase rotation of a light signal, and thereby compensate for polarization mode dispersion. Magneto-optic substances and components are well known. In one common application, a magneto-optic element is used to implement an optical isolator. (See, attached materials, Saleh et al., *Fundamentals of Photonics*, pages 225-34; and Kashima, Norio, *Passive Optical Components for Optical Fiber Transmission*, pages 293-99).

Consistent with this disclosure, the magneto-optic element used in the optical isolator provides a fixed rotation ($\theta = \pi/4$) to incoming optical signals. Hence, the magnetic field H in the defining equation $\theta = VHL$ is fixed for a given set of environmental operating conditions, V being a fixed constant, and L being a fixed length for the magneto-optic element.

However, in the present invention, a time varying magnetic field is used to dynamically compensate for transmission induced polarization mode dispersion. The magnetic field is varied in accordance with a control signal developed from a feedback path. For example, the system shown in Fig 1 derives a magnetic field control signal from an RF feedback loop in which an output optical signal is converted in electrical form for output. This electrical data signal is tapped, filtered, and conditioned before being applied to a controller. By well-understood principles, the PMD apparent in the optical signal may be determined by the corresponding electrical signal. (See e.g., US Patents 5,311,346 and 5,930,414, as well as Ozeki et al, *Polarization mode dispersion equalization experiment using a variable equalizing optical circuit controlled by a pulse waveform comparison algorithm*, OFC '94 Technical Digest at 62-64 (1994), and Takahashi et al., *Automatic Compensation Technique for Timewise Fluctuating Polarization Mode Dispersion is In-Line Amplifier Systems*, Electronics Letters Vol. 30, No. 4, pages 348 (1994). Alternatively, the control signal may be derived from well known optical means.

However derived, the control signal causes the magnetic field strength to vary in such a manner as to reduce or minimize the amount the polarization mode dispersion.

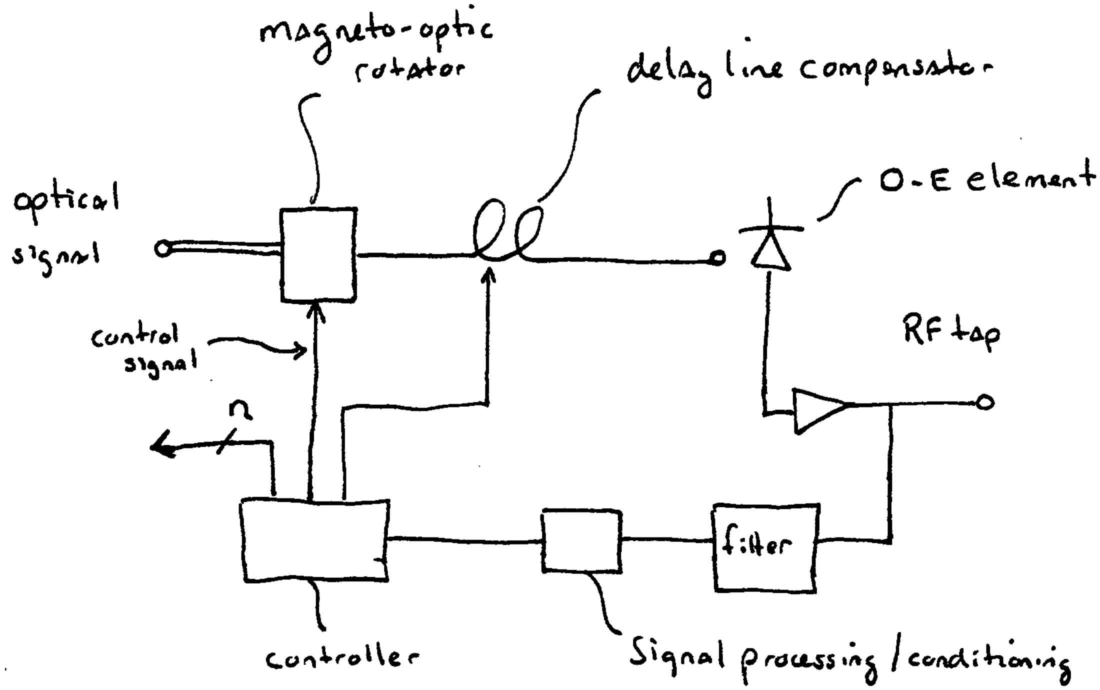
magneto-optic rotator
delay line compensator
O-E element
optical signal
control signal
n
RF tap
filter
controller
Signal processing / conditioning

Fig 1